

**1. Plate Heat Exchanger Structure of Inner Strainer**

Hisaka Plate Heat Exchanger's inner strainer is an optional accessory.

As inner strainer is being installed inside the nozzles, please ensure no large-sized debris or foreign material is contained in the fluid which will be using before operation.

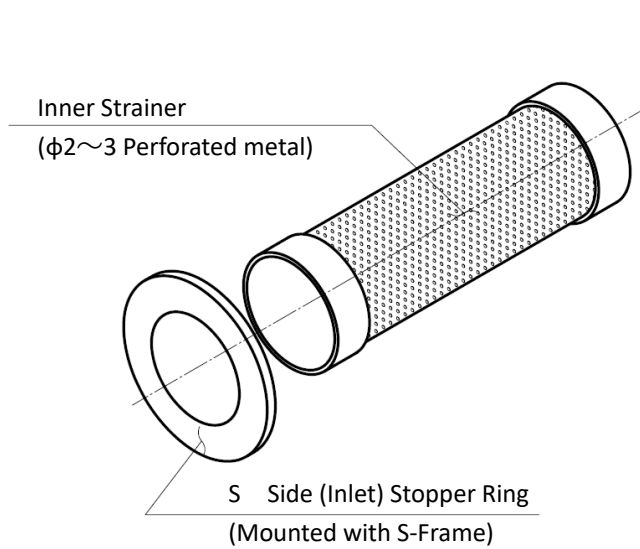
Herewith, verify the cleanness of fluid that can help to prevent clogging inside heat transfer plates, thus decreasing the frequency of disassembling and maintenance can be achieved.

Inner strainer is inserted into E-nozzle of Heat Exchanger, and being mounted with blind flange.

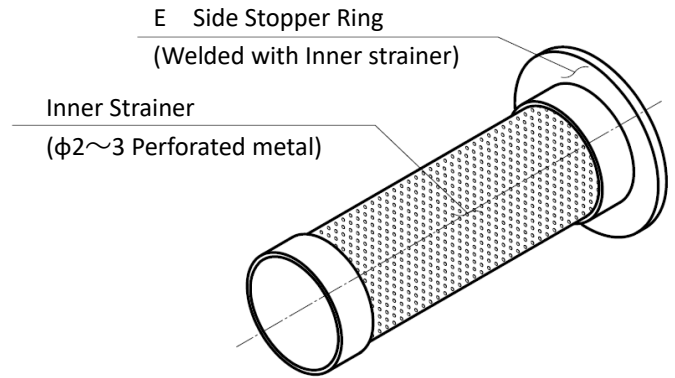
The Structure of inner strainer is shown below as "Fig. 1" or "Fig. 2".

Rust preventive paint is coated on each end of the stainless strainers.

When the strainers made of the material which is not required rust preventive paint (titanium, super stainless steels etc.), rust preventive paint is not applied.



**Fig.1**



**Fig.2**

**2. Operation, Shutdown**

- (1) Start the operation according to section 9 (operation) of "2 Instruction Manual".
- (2) Shutdown the operation according to section 10 (shutdown) of "2 Instruction Manual".

	<p><b>[CAUTION] Do NOT let clogging occur inside inner strainer</b></p> <ul style="list-style-type: none"> <li>● If there are large amount of debris or foreign materials inside inner strainer during operation, it will be cause of vibration and damage. Clean up foreign materials regularly.</li> </ul>
	<p><b>[CAUTION] Check the materials used in manufacture of inner strainer</b></p> <ul style="list-style-type: none"> <li>● Before performing anti-fouling procedure (e.g. Electrolysis, Chemical dosing), check the materials of inner strainer, with accordance to information described in the Assembly Drawing. As corrosion might occur depending on material of inner strainer.</li> </ul>
	<p><b>[CAUTION] Do not operation under the abnormal vibration (resonance)</b></p> <ul style="list-style-type: none"> <li>● When abnormal vibration (resonance) or abnormal sound occurs during the operation, stop operation immediately and recheck the installation or operation condition.</li> </ul>

### 3. Maintenance

Regular maintenance is recommended for the long-term use of inner strainer.

#### [Note]

- The maintenance cycle is depending on usage conditions. It is recommended to perform maintenance a month for brand-new inner strainer and estimate appropriate maintenance cycle based on the result thereof.
- Check if the inner strainer is applicable to back washing before carrying out back washing procedure. If it is not applicable to back washing, please confirm by the sticker which is adjacent to E-nozzle, as back washing caution is being indicated on it.
- When carry out chemical washing, please withdraw the inner strainer before procedure starts. If not, exfoliation of anti-rust painting and corrosion might occur.

When performing maintenance of Plate Heat Exchanger, please refer to "2 Instruction Manual".

#### 3-1. Disassembly

Disassembling procedure for inner strainer

- (1) According to section 10 (shutdown) of "2 Instruction Manual", shutdown the equipment and drain out the fluid.
- (2) Refer to the Assembly Drawing and check the position of E-nozzle where inner strainer is being inserted.
- (3) Loosen the tightening nuts of E-nozzles and remove the blind flanges.
- (4) Hold the edge of inner strainer, and withdraw it carefully.

#### [CAUTION] Do NOT disassemble the heat transfer plates when inner strainer is installed.



- Inner strainer is installed at the inner side of port hole of heat transfer plates. Please withdraw the inner strainer first when disassembling, as to prevent plates and inner strainer from damage.

#### [CAUTION] Do NOT withdraw the inner strainer forcibly.



- Inner strainer is installed at the inner side of port hole of heat transfer plates. If withdrawing it forcibly, it is possible to drop and cause damage. Furthermore, as withdrawing inner strainer forcibly under a strongly interfered condition, damage of components might occur, so please hold the inner strainer slightly upward and remove carefully.

#### 3-2. Cleaning

For the cleaning of inner strainer, perform by using high-pressure washer or a soft brush. And do not use steel brush or steel wool when cleaning.

#### [CAUTION] Do NOT use steel brush or steel wool to clean inner strainer



- If inner strainer is damaged by using a steel brush or steel wool, it might cause corrosion. Therefore, use a soft brush, such as nylon, so as not to damage the inner strainer.

#### [CAUTION] Precaution for using a high pressure washer



- In order to avoid damaging the inner strainer, discharge pressure should be kept from 1 to 1.5 MPaG. Use a soft brush with running water, such as nylon, to deal with the dirt which is difficult to remove.



#### 3-3. Maintenance

Exchange of inner strainer

- If the inner strainer is in need of repair due to deformation, corrosion or damage, replace with a brand-new part.

### 3-4. Inspection

Be sure to perform the following inspections before installing inner strainer.

- Carry out visual inspection on inner strainer to ensure there is no harmful deformation, corrosion or damage.
- Check the direction of inner strainer inserted. Also, "U" (Upper) mark is engraved on the edge of inner strainer, keep the "U" mark being on the upper side when inserting.

### 3-5. Installation

(1) Installing of Piping gasket

- For Metal covering type E-nozzle  
Strainer of Fig.1: Not necessary to install with a piping gasket.  
Strainer of Fig.2: Install the piping gasket with E-nozzle.
- For Rubber covering type E-nozzle  
Not necessary to install with a piping gasket.

(2) Insert inner strainer into E-nozzle.



**[CAUTION] Insert the inner strainer carefully**

Inner strainer is installed at the inner side of port hole of heat transfer plates. Hold the inner strainer slightly upward when inserting, in order to prevent plates and inner strainer from being damaged.

- (3) Install mount the piping gasket and blind flange in order.  
(4) Fix the blind flange by using the tightening nuts of flange.

### 3-6. Inspection

- (1) Leakage detection shall be performed once assembly of inner strainer has been completed.  
With accordance to the designated pressure indicated on the name plate, to perform water conduction and please verify there is no leakage from the blind flanges.
- (2) Maintain pressure for 10 minutes or longer. All procedures can be completed if no leakage occurred.  
In case of any leakage detected, mark on the leaking part and disassemble again, then perform visual inspection on the nozzle and gasket surface.

## 4. Long-term Storage/Preservation

The storage conditions are depending on the applications and the environment. If once the unit has operated and long-term storage is required, for a longer lifetime of inner strainer, PHE is to be placed in storage as below table.

In addition, "3-2.Cleaning" before performing long-term storage is recommended.

Environment/Application	Storage Procedure
General use	It must be completely drained and storage with empty condition to avoid failures such as alteration of any remaining liquid, corrosion in inner strainer, and damage to components from freezing.
Seawater use	It must be completely fulfilled and storage. It is recommended to replace the seawater with clean water to prevent decay. In case of long-term storage with an empty and dry condition, dried scale on the inner strainer might not be getting dried and concentrated, it might cause corrosion.
Cold area use	It must be completely drained and storage with empty condition If freezing occurs in inner strainer, it might lead to damage of inner strainer.
Low temperature media use	



**[Caution] Do NOT leave the inner strainer seawater drained.**

If inner strainer is non-cleaned for long period with seawater drained, it could because of corrosion.



